

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 47-17614
Exam Date: 8/10/2017

1. Current Owner:
DOUGLAS L ELGAN PO BOX 544 SODA SPRINGS ID 83276 (208) 569-6479 And
CLARELYN ELGAN PO BOX 544 SODA SPRINGS ID 83276 (208) 543-6322
2. Accompanied by: Visited property with permission from Duane Elgan (current property manager)
Phone No: (208) 569-6479
Address: 1213 Bailey Creek CIR, Soda Springs, ID 83276
Relationship to Permit Holder: Son of Douglas & Clarelyn Elgan

3. **SOURCE:**
GROUND WATER

TRIBUTARY:

B. OVERLAP REVIEW

1. Other water rights with the same place of use: Within service area for Banbury Pipeline CO INC (WR 36-2038)
2. Other water rights with the same point-of-diversion: N/A

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER L2 (NE¼NW¼) Sec. 33, Twp 08S, Rge 14E, B.M. TWIN FALLS County

Method of Determination: GPS'd well head which coincided with spatial data point in ArcMap.

2.

PLACE OF USE: DOMESTIC

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
08S	14E	33					X L2	X L2											

Method of Determination: Site visit and aerial imagery in ArcMap.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

☒ Indicate weir size/pipe as applicable.☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.☒ Aerial Photo Attached (required for irrigation of 10+ acres).☒ Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0066737			Artesian Well		

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS – N/A

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: No measurement required per IDAPA 37.03.02 Beneficial Use Examination Rules as the permitted flow rate of 0.03 cfs falls below the 0.24 cfs or greater flow rate amount requiring measurement.

_____ Additional Computation Sheets Attached

E. FLOW CALCULATIONS:

Not required per IDAPA 37.03.02 Beneficial Use Examination Rules as the permitted flow rate of 0.03 cfs falls below the 0.24 cfs or greater flow rate amount requiring measurement.

Measured Method:

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: Currently no irrigation under this right; limited to ½ acre if developed.

$$I_R = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$$

2. Volume Calculations for Other Uses:

Domestic water use is exempt from the volume reporting requirement per

IDAPA 37.03.02 Beneficial Use Examination Rules. However, **volume for heating was calculated at 11.3 afa;**

See attachments #1 & #2. Heating volume was calculated to indicate whether or not the heating use

(authorized under condition 071 on this permit and subsequent license) would fall within the domestic limitation of 13,000 gallons per day which is approximately 14.6 afa.

G. NARRATIVE/REMARKS/COMMENTS

I called Duane Elgin, property manager and son of the current owners, on 8/10/2017 and he gave me permission to visit the property for purposes of conducting a field exam. He indicated that his parents are both in a rest home and that the property will soon be listed for sale.

I visited the property that afternoon mainly to see if the system was constructed in compliance with condition 196 on the permit. Condition 196 states: "The right holder shall install or construct a straight length of conduit or ditch suitable for installation of a device for measuring the entire flow of water being diverted in connection with this right. If the right holder uses conduit, the straight length of conduit shall be at least fifteen times the diameter of the conduit and shall be above ground or otherwise easily accessible." This condition is intended for use on appropriations larger than 42-111 domestics within areas that are part of the Wild and Scenic Rivers stipulated agreement and is used to ensure the developed system can allow for installation of a measuring device should one eventually be required. In my conversation with Mr. Elgan earlier that day, he indicated that he probably wasn't in compliance with the condition, but there was a 60' length of straight 1.5" pipe buried 3' underground that could be excavated to accommodate installation of a measuring device should one be required. What I found (see Figure 1) was an 11" straight piece of 1.5" inch galvanized pipe coming off the well head before the pipe turns 90° and goes underground. When I returned to the office, I discussed the system design with the regional manager and distribution staff. Distribution staff indicated the 11" section of pipe was sufficient to allow for measurement of the flow from the well. We then decided that since this is a domestic permit and is not in area that is part of a wild and scenic watershed, that the condition could be dropped at licensing. Another condition on the permit, condition 197 is also used in Wild and Scenic watersheds on appropriations larger than 42-111 domestics per the stipulated agreement. This condition states: "Upon specific notification by the Department, the right holder shall install and maintain acceptable measuring device(s), including data logger(s), at the authorized point(s) of diversion, in accordance with Department specifications." I'm modifying this condition on the license by dropping the data logger requirement and the condition code for licensing. This way, the intent of both conditions is maintained on the license by indicating that at some future date the Department may require installation of a measuring device that complies with Department specifications. Condition 046 will also be dropped at licensing as it pertains to well construction standards and is typically dropped at licensing since well construction is completed.

The well's location and POU description were not entirely correct on the permit and both require correction. The permit indicated that the well would be located in L2(NWNW) of Sec. 33, Twp 08S, Rge 14E, but was actually drilled in L2(NENW). The POU only listed L2(NWNW) but the shop also overlaps into L2(NENW) as well. The POU will be modified to describe both L2(NWNW) and L2(NENW). Both of these actions can be accomplished without a licensing amendment because both descriptions are contained within the same irregular tract that is officially described as Government Lot 2. Dividing the lot into quarter-quarters was accomplished by IDWR staff to accommodate IDWR needs and the quarter-quarter descriptions added by the Department do not replace or supersede the actual government lot descriptions.

The system supplies both culinary water and heating water to the house and shop. The system is currently turned off as no one currently resides at the property. The heating system is clearly evident by the pipes running between the house and shop (see figure 2). Mr. Elgan also indicated that the well has been used primarily for heating purposes. Irrigation of up to ½ acre is allowed (condition 187 on license and permit) but all current irrigation on the property (3.7 acres in 2017) utilize water shares from the Banbury Pipeline CO INC (WR 36-2038).

Recommend licensing 0.03 cfs with no annual volume (per IDAPA 37.03.02 Beneficial Use Examination Rules) for domestic use. Condition 071 on both the permit and license, limits domestic use to a maximum of 13,000 gallons per day.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

BENEFICIAL USE
DOMESTIC

PERIOD OF USE
01/01 to 12/31

DIVERSION RATE
0.03 CFS

Totals: 0.030 CFS

2. Recommended Amendments

☒ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

☒ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ None

I. AUTHENTICATION

Field Examiner's Name

Ben Mith

Date

8/16/17

Reviewer

Date



Figure 1: Well Head



Figure 2: Pipes for heating system between the house and shop



Figure 3: House and Shop



Figure 4: Pressure gauge on well head

System Diagram



Attachment #1: Volume calculation WR 47-17614 Domestic w/ heating

The annual volume requirement was calculated using a Memorandum from Rick Sterling to Terry Blau dated March 25, 1988 and Administrative Memorandum from Norm Young dated September 28, 1992 titled Rate of flow for heating use. The memorandums contain equations for calculating the annual water requirements for geothermal heating. The equations are listed below with an explanation of the variables; data was taken from the field exam and the National Oceanic and Atmospheric Administration (NOAA).

Explanation of values used in calculations:

Square footage of the home is 1992 sq/ft. Heat Load value (97,429) represents the value for a normally insulated home insulated with R-13. The temperature of the geothermal source was measured at 130.0°F. The temperature in the shop is expected to be 70 °F. The annual heating degree days were taken from the HAGERMAN 2SW, IDAHO weather station because it is closest in elevation and proximity (<http://www.wrcc.dri.edu/summary/Climsmsid.html>).

Temperature Drop Across System Calculation: $\Delta T_s = 0.3(S - T)$

Where:

ΔT_s = Temperature drop across system

S = Geothermal source temperature

T = Temperature required by system

Values used:

$$S = 130\text{ }^{\circ}\text{F}$$

$$T = 70\text{ }^{\circ}\text{F}$$

$$\Delta T_s = 0.3(S - T) = \boxed{18.0}\text{ }^{\circ}\text{F}$$

Volume Calculation:

$$V = \frac{HL \times DD \times 24 \times C_D}{\Delta t_1 \times k \times C \times \Delta t_2}$$

Where:

V = Annual volume of geothermal water required

HL = Peak heating load in BTU/hr (taken from graph)

DD = Annual heating degree-days

24 = 24 hrs/day

C_D = Empirical correction factor for heating effect vs. 65 °F degree-days

Δt_1 = Design temperature difference

k = Correction factor to account for losses, use 0.90

C = Constant to correct for desired units, 2.72×10^6 BTU/AF-°F

$\Delta t_2 = \Delta T_s$ = Temperature drop across system (calculated above)

Values used:

$$HL = 97,429\text{ BTU/hr}$$

$$DD = 5,601\text{ }^{\circ}\text{F}$$

$$24 = 24\text{ hrs/day}$$

$$C_D = 0.61$$

$$\Delta t_1 = 73\text{ }^{\circ}\text{F}$$

$$k = 0.9$$

$$C = 2,720,000\text{ BTU/AF-}^{\circ}\text{F}$$

$$\Delta t_2 = 18\text{ }^{\circ}\text{F}$$

$$V = \frac{HL \times DD \times 24 \times C_D}{\Delta t_1 \times k \times C \times \Delta t_2} = \boxed{2.5}\text{ afa}$$

Attachment #2: Volume calculation WR 47-17614 Domestic w/ heating

The annual volume requirement was calculated using a Memorandum from Rick Sterling to Terry Blau dated March 25, 1988 and Administrative Memorandum from Norm Young dated September 28, 1992 titled Rate of flow for heating use. The memorandums contain equations for calculating the annual water requirements for geothermal heating. The equations are listed below with an explanation of the variables; data was taken from the field exam and the National Oceanic and Atmospheric Administration (NOAA).

Explanation of values used in calculations:

Square footage of the shop is 4269 sq/ft. Heat Load value (198,010) represents value for a building with little to no insulation. The temperature of the geothermal source was measured at 130.0°F. The temperature in the shop is expected to be 70 °F. The annual heating degree days were taken from the HAGERMAN 2SW, IDAHO weather station because it is closest in elevation and proximity (<http://www.wrcc.dri.edu/summary/Climsmsid.html>).

Temperature Drop Across System Calculation: $\Delta T_s = 0.3(S - T)$

Where:

ΔT_s = Temperature drop across system

S = Geothermal source temperature

T = Temperature required by system

Values used:

$$S = 130 \text{ }^{\circ}\text{F}$$

$$T = 70 \text{ }^{\circ}\text{F}$$

$$\Delta T_s = 0.3(S - T) = \boxed{18.0}^{\circ}\text{F}$$

Volume Calculation:

$$V = \frac{HL \times DD \times 24 \times C_D}{\Delta t_1 \times k \times C \times \Delta t_2}$$

Where:

V = Annual volume of geothermal water required

HL = Peak heating load in BTU/hr (taken from graph)

DD = Annual heating degree-days

24 = 24 hrs/day

C_D = Empirical correction factor for heating effect vs. 65 °F degree-days

Δt_1 = Design temperature difference

k = Correction factor to account for losses, use 0.90

C = Constant to correct for desired units, 2.72×10^6 BTU/AF-°F

$\Delta t_2 = \Delta T_s$ = Temperature drop across system (calculated above)

Values used:

$$HL = 345,917 \text{ BTU/hr}$$

$$DD = 5,601 \text{ }^{\circ}\text{F}$$

$$24 = 24 \text{ hrs/day}$$

$$C_D = 0.61$$

$$\Delta t_1 = 73 \text{ }^{\circ}\text{F}$$

$$k = 0.9$$

$$C = 2,720,000 \text{ BTU/AF-}^{\circ}\text{F}$$

$$\Delta t_2 = 18 \text{ }^{\circ}\text{F}$$

$$V = \frac{HL \times DD \times 24 \times C_D}{\Delta t_1 \times k \times C \times \Delta t_2} = \boxed{8.8} \text{ afa}$$

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

DA

1. WELL TAG NO. D 0066737

Drilling Permit No. 873799

Water right or injection well # 47-17614

2. OWNER: Douglas Elgan

Name Douglas Elgan

Address 4785 N 1115 E

City Buhl State ID Zip 83316

3. WELL LOCATION:

Twp. 08 North ☐ or South ☐ Rge. 14 East ☐ or West ☐

Sec. 33 NW 1/4 NW 1/4 NW 1/4

Gov't Lot L2 County Twin Falls

Lat. (Deg. and Decimal minutes)

Long. (Deg. and Decimal minutes)

Address of Well Site

(Units at least name of road + Distance to Road or Landmark) City

Lot. Blk. Sub Name

4. USE:

☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other

6. DRILL METHOD:

☐ Air Rotary ☒ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method/procedure
Neat Cement	0	998	15	Pumped conventiona

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing	Linear	Threaded	Welded
10-3/4	0	40	.250		☒	☐	☐	☒
6"	0	998	.250		☒	☐	☐	☒

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s)

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N MethodManufactured screen ☐ Y ☒ N Type

Method of installation Not Applicable

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
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Length of Headpipe Length of Tailpipe

Packer ☐ Y ☒ N Type

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method
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11. FLOWING ARTESIAN:

Flowing Artesian? ☒ Y ☐ N Artesian Pressure (PSIG) 57

Describe control device 10" 150 Master Valve w/ 10" blind flange

w/ 2" 2000 lb PSI Ban Valve

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 376 Static water level (ft) Artesian

Water temp. (°F) 130 Bottom hole temp. (°F) 130

Describe access port 2" pipe

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
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Test method:

Pump	Bailer	Air	Flowing artesian
☐	☐	☐	☒

Water quality test or comments: None

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
14-3/4	0	40	Clays/sands		X
9-1/2	40	140	Sands/gravel		
	140	154	Blue clays		
	154	160	Black shale clays		
	160	255	Black basalt		
	255	320	Grey clay		
	320	365	Brown sands		
	365	370	Black basalt		
	370	480	Black/blue basalt		
	480	490	Red clay/shale		
	490	525	Black basalt		
	525	530	Red clay		
	530	570	Black basalt		
	570	576	Fractured basalt		
	576	595	Black basalt	X	
	595	615	Grey clay		
	615	680	Green shale		
	680	810	Grey sticky clay		
	810	820	Grey clay/black sand		
	820	890	Black brown red gravel		
	890	940	Grey shale		
	940	968	Gritty grey clay		
	968	1012	Blue shale		
6-1/8	1012	1155	Blue clay		
	1155	1213	M.C. Sands	X	

RECEIVED

JUN 18 2015

DEPT OF WATER RESOURCES
SOUTHERN REGION

Completed Depth (Measurable):

Date Started Apr 15, 2015

Date Completed May 15, 2015

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed

Company Name Welsco Corporation

Co No

*Principal Driller [Signature] Date 6-10-15

*Driller Date

*Operator II Date

Operator I Date

* Signature of Principal Driller and rig operator are required

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